

Occurrence Frequency of Exfoliative Cheilitis in Dental Practice

Zurab Khabadze^{1*}, Evelina Arutyunyan¹, Arsen Isakhanyan¹, Khatai Mamedov¹, Adam Umarov¹, Ahmad Wehbe¹, Marina Dashtieva¹, Yusup Bakaev¹, Saida Abdulkerimova¹, Andrey Zoryan¹, Oleg Mordanov¹

1. RUDN University, Moscow, Russia.

Abstract

The purpose of this review article is to determine the frequency of occurrence due to comorbidities, as well as age-related features.

In the course of a systematic review of the literature, information was searched in Russian and English without time limits in the PubMed electronic database, GoogleScholar, Cyberleninka and in the literature lists of relevant studies and reviews. Full-text articles were selected that describes the incidence of exfoliative cheilitis in age groups; associated with various labor activities of patients, as well as in regions with a high prevalence of OCM diseases

Included publications contained a description of this disease with clinical cases.

The review reviewed 123 articles. After analyzing the literature according to the inclusion criteria, the total number of included publications was 23 publications.

According to the studied literature, it can be assumed that exfoliative cheilitis is a fairly common disease in modern day-today dental practice and has a diverse etiology, therefore, the correct algorithm for primary diagnosis and routing of patients contributes to the formation of a correct clinical diagnosis.

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Introduction

Exfoliative cheilitis (*cheilitis exfoliativa*) is a chronic disease which affects the vermilion¹⁻³. Initially, this disease was first described as “persistent desquamation of the lips” by Stelwagon in 1900. Later on, Miculicz and Kemmel proposed the term of “exfoliative cheilitis” for this disease (ICD-10: K13.0 - exfoliative cheilitis)⁴.

Exfoliative cheilitis is a common pathology diagnosed in modern-day dental practice, and its prevalence is generally associated with:

- Co-existing (concomitant) diseases
- Geographical location
- Pernicious habits
- Psychoemotional disorders

- Hereditary (genetic) factors
- Age group
- Genital characteristics
- Dermatoses
- Impaired thyroid function

Exfoliative cheilitis is often overlooked or misdiagnosed as lip dryness due to their similar clinical features, such disease must be treated immediately to prevent any sort of complications^{5,6}.

The etiologic and pathogenic factors of exfoliative cheilitis remains insufficiently studied. Most researchers believe that exfoliative cheilitis is an outcome of neurogenic mechanics, family predisposition, or due to trophic changes because of psychophemotional disorders. Others believe that the early diagnosis and long-lasting course of exfoliative cheilitis is associated with genetic factors. Furthermore, Pernicious habits stand out as a root of exfoliative cheilitis, such as lip licking or biting, misuse of chewing gums, or sulking. All of these factors disrupt the regenerative factors, and reduces the resistance of the vermilion, leaving the vermilion weak against adverse factors⁷. Therefore, having

*Corresponding author:

Zurab Khabadze
Department of Therapeutic Dentistry, RUDN University,
Medical Institute, Miklukho-Maklaya str. 6,
Moscow 117198, Russia.
E-mail: dr.zura@mail.ru

persistent pernicious habits complicate the course of the disease. Microscopic histopathological examination should reveal stromal fibrosis, as a reaction of inflammatory, immunological, allergic, or trophic disorders. Changes in the epithelium of vermillion are defined as secondary changes, that lead to acanthosis and parakeratosis, resulting in exfoliation of the epithelial layers.

Gender and age analysis of the patients have shown that females up to age of 45 are more prone to exfoliative cheilitis. The dry form of exfoliative cheilitis is mainly diagnosed in patients between the age of 16-40 years, whereas the exudative form is diagnosed between the age of 16-65 years^{8,9}.

As exfoliative cheilitis is one of the most commonly diagnosed pathology of the oral mucosa and lips diseases, exfoliative cheilitis has two clinical forms: dry and exudative forms. For both forms, the typical localization of the pathological process is in form of a tape between the right and left oral (labial) commissures to the muco-cutaneous line, or "we-dry border" or "Klien's line" as known in Russian literature, which is the line where the vermillion passes into the oral mucous membrane. The oral commissures and the skin above the vermillion border are free of skin rashes.

The dry form of exfoliative cheilitis is characterized by the appearance of thin semitranslucent micaceous grayish-brown squamae, which are tightly attached to the vermillion in the central part, and freely hang along the periphery. Accordingly, each squama stays for about 5-7 days, after that, it can be easily removed. A bright red surface on the vermillion can be found under the squama, and erosions never occur at this place. Patients might complain on the dryness of the lips, and slight burning in lips.

The exudative form of exfoliative cheilitis is characterized by grayish-brown squamae, which can reach extensive sizes, creating the illusion of damage to the entire vermillion, sometimes creating a sort of apron which hangs freely from the lip. After removing the squama, a bright red smooth surface of the vermillion is observed, no erosion is observed. This pathology never expands outside the vermillion^{1,5}.

There are numerous reasons by which cheilitis can occur. Mainly cheilitis occurs with underlying dermatosis, psoriasis, tuberculosis,

lupus erythematosus, syphilis, lichen planus, as well as other pathologies. Moreover, avitaminosis, disorders of the nervous system, depression, might cause cheilitis, although such cases are rare. Some authors consider thyroid dysfunction and hypovitaminosis as an etiological factor of exfoliative cheilitis¹⁰.

The aim of our review was to analyze the prevalence of exfoliative cheilitis in regard to comorbidity, and age-related features.

Materials and methods

During the systematic review of the literature, an electronic search was conducted in English and Russian languages without a time limit in the databases of PubMed, Google Scholar, Cyberleninka, and in the literature lists of relevant studies and reviews. Full-text articles describing the frequency of occurrence of exfoliative cheilitis in age groups were selected; publications related to various labor activities of patients, as well as in regions with a high prevalence of oral mucosa diseases were included, in which a description of this disease with clinical cases was included.

Search words: exfoliative cheilitis, prevalence of exfoliative cheilitis, diseases of the oral mucosa, diseases of the vermillion, oral mucosa diseases under psychoemotional disorders.

Publications containing the following have been selected and included in the review: description of exfoliative cheilitis, clinical cases of this disease. All included studies are dated 2007 or later.

The publications were selected and included in the analysis in several stages. At the first stage, the exclusion criterion was the selection of literature published prior to 2007. Then the analysis of the title and brief content of the publications was carried out. Finally, detailed analysis with consideration of full-text versions of the selected articles took place.

Results

A total of 123 articles were identified and reviewed by keywords and resumes. After analyzing the articles for the presence of exclusion criteria, the total number of 23 articles were selected. 5 were found on PubMed, 15 on Google Scholar, and 3 dissertations that were

freely available.

Discussion

Exfoliative cheilitis is a common disease in day-to-day dental practice. The prevalence percentage of this disease varies from the etiological nature.

Psychoemotional disorders is one of the main causes of exfoliative cheilitis. At the department of clinical dentistry at MSUMD named after A. I. Evdokimov 17 patients lie under supervision: 8 school-aged children, 7 students, and 2 military personnel. Painful cracks (fissures) were found in 6 patients due to dryness and squama. A slight hyperemia of the lip mucosa in the muco-cutaneous zone was determined. Examination of the plaque index has shown unsatisfactory hygiene of the oral cavity (PI = 2.0 or more).

All patients underwent a course of systemic psychocorrection jointly with a psychiatrist¹³.

According to Aizatulina D.V. (2009), oxidative stress plays an important role in the pathogenesis of infantile cerebral paralysis (ICP), and other psychoneurological disorders (PND), as the most probable mechanism of destabilization of the cellular genome. The study examined children from the age of 7 to 17 years with PND (49% with mental retardation (deficiency), 16% with ICP, 7% with autism, 8% with schizophrenia, 14% with oligophrenia, and 6% with Down's syndrome).

The group consisted of 170 mentally healthy children (without PND) of the same age (7-12 years (K1) and 13-17 years (K2)). Clinical examination of the oral cavity and sampling of the test material (oral fluid) was carried out at the pedodontics department of the State-Financed Educational Institution of the Higher Professional Education Kuban State Medical University of the Russian ministry of health, and at the dental innovative center "Picasso" (private practice in Krasnodar, Russian Federation).

The main group revealed a higher prevalence of the diseases of the oral cavity and lips (traumatic lesions of the oral mucosa and lips 55%; meteorological cheilitis 25%; angular cheilitis 12%; exfoliative cheilitis 8%)¹¹.

Starikova I.V. et al. investigated in their study the reports and statistical documentation at the autonomous public health care institution for

the last 5 years, that includes medical records, advisory journal, laboratory tests, and treatment methods. In total, 276 patient records were analysed. The patients' age ranged from 20 to 70 years, 126 were males, and 150 females.

Exfoliative cheilitis in their study was found in 28 patients (10.1%). It was referred to the group of psychosomatic diseases. Patients usually had two types of psychoemotional disorders: in the dry form – depression, and in the exudative form – history of anxiety. Exfoliative cheilitis was more common in young patients with pernicious habits, such as lip licking and/or biting, and oral breathing. The presence of a cosmetic defect led to the development of adolescent complexes, which could provoke mental disorders. The records indicated that the patients were emotionally tense and withdrawn during the examination. 18 patients were under psychotherapy at the time of dental treatment¹.

Denisenko L.N. et al. in their study proved the connection of exfoliative cheilitis with the effect of iron deficiency anemia in pregnant women. Based on lip diseases, exfoliative cheilitis was the most often detected nosology: 29.6% due to iron deficiency anemia, and 19.83% during the physiological period of pregnancy⁴.

Sadovnikova et al. in their study investigated the association of gastroenterological diseases with the pathology of the oral mucosa and the vermilion. This study was conducted at the gastroenterology department of the children's city hospital #27 "Aibolit" in Nizhny Novgorod, Russian federation. Analysis of medical histories of 70 boys and girls aged 11-17 with gastrointestinal pathology was conducted in this study, 33 of them were boys (48%), and 37 were girls (52%). Prepubertal adolescents accounted for 50% (n = 35), pubertal adolescents accounted for 50% (n = 35). Among the identified pathologies in the adolescence period, exfoliative and meteorological cheilitis were the most common pathologies of all the examined children out of the pathology of the oral mucosa and the vermilion at 62.5% (25 out of 40 minors). no significant differences between the two age groups were found: 34.3% among all examined children in the age group from 11 to 13 years and 37.1% in the age group from 14 to 17 years⁸.

Artykova N.K. et al. in their study revealed pathological changes in the form of exfoliative

cheilitis in 12 (35.2%) of patients using fixed prostheses, and in 4 (18.8%) patients using metal crowns and in 8 (22.9%) patients with plastic-fused-to-metal (PFM) crowns⁷.

A.V. Zubareva and S.V. Averyanov in their article investigated the association between dentofacial abnormalities and cheilitis. To study the prevalence of dentofacial abnormalities and cheilitis and their association, they conducted a dental examination of 1398 students (372 boys and 1026 girls) aged 16 to 22 years of higher educational institutions in Ufa, Russian Federation. The prevalence of dentofacial abnormalities was 83.12% (83.43% among girls, 82.26% among boys). The structure of dentofacial abnormalities was as follows: abnormalities of individual teeth were diagnosed in 5.51% of the examined students, abnormalities of dentition - in 22.72% of students, abnormalities of occlusion - in 6.54% of students, combined anomalies - in 65.23%. Lip pathology was observed in 23.8% of students [10]. In children aged 4 to 15 years with dentofacial abnormalities, cheilitis occurred much more often (66%) than in children without dentofacial abnormalities (28%). According to Maximova O.P. (2006), Lip diseases in children, particularly meteorological and exfoliative cheilitis, mainly develop due to violation of the physiological movement of the lips (incomplete or incorrect closure).

Ibragimova F. and Zhumatov U.Zh conducted a study in which 500 workers at the Navoi Chemical Plant of household chemicals in Uzbekistan (the main group of those surveyed) were examined according to the WHO methodology. As a control group, 500 employees of the administration, electricians, locksmiths, janitors, and the population living in the vicinity of the factory, but not exposed to chemical plants, were examined. The results of the conducted studies showed that among those working, there is a higher ($p < 0.001$) frequency of pathology of the oral mucosa than in the control group. Out of all diseases, exfoliative cheilitis occurred in (8.6%) of the company's employees⁵.

Kabirova M.F. et al. conducted a dental examination of 137 workers of JSC "Polyef" aged between 35-44 years. The most common among lip diseases was exfoliative cheilitis, as it was detected in every second worker and was 5 times more often diagnosed than in the control group ($p < 0.05$). Exfoliative cheilitis was diagnosed approximately equally in workers of different

professions and with different length of service⁶. Burganova K.I. et al. conducted a comprehensive dental examination of 101 workers of JSC "Khimprom" and 25 people as a control group. The study showed a high prevalence of diseases of the oral mucosa and lips: The workers were frequently affected in the vermilion at 2.9% of all cases, and exfoliative cheilitis was found in every fifth worker¹⁶.

Gazhva S.I. and Dyatel A.V. in their study investigated the prevalence of diseases of the oral mucosa and vermilion in the population of the Nizhny Novgorod region, Russian Federation. They concluded that exfoliative cheilitis was the most common pathology measuring at 31.58% of all cases. A review of non-Russian literature revealed mainly descriptions of a couple of clinical cases of exfoliative cheilitis and its treatment^{3,14}.

Umarova K. V. and Denisova M. A. studied the prevalence of exfoliative cheilitis for three years at the department of oral diseases of the Central Research Institute of Dental and Maxillofacial Surgery in Moscow, Russian federation. In this period of time, 3664 patients applied to the department: 1176 patients in 2012, 1238 patients in 2013, and 1250 patients in 2014. Lip diseases out of the diseases of the oral cavity were 6%. 220 people have applied for lip diseases diagnosis in these three years: 65 in 2012, 75 in 2013, and 80 in 2014. Among lip diseases, exfoliative cheilitis was commonly diagnosed. During the study period, a total of 74 patients with exfoliative cheilitis were observed in the department: 22 in 2012, 32 in 2013, and 20 in 2014. The proportion of patients with exfoliative cheilitis in the overall structure of the diseases of the oral cavity was 2.02%. Age structure analysis of patients concluded the highest prevalence of exfoliative cheilitis among females under the age of 45. The two forms of exfoliative cheilitis were observed in the patients, the dry form occurred in 63.51% of cases, and the exudative form was diagnosed in 36.49% of cases¹⁴.

Rabinovich O.F. et al. stated in their article "Modern possibilities for the treatment of cheilitis" revealed that at the department of oral diseases of the Central Research Institute of Dental and Maxillofacial Surgery in Moscow, Russian federation, in the period from 2013 to 2015, the number of patients with cheilitis was 72 patients, of which 26 patients with the dry form of exfoliative cheilitis, and 24 with the exudative

form of exfoliative cheilitis ¹⁵.

Bekzhanova O.E., Astanakulova M.M., studied the clinical and epidemiological characteristics of exfoliative cheilitis, after examining 1695 patients aged 16 to 80 years, they concluded that the incidence of cheilitis was 3.2%. as per Dzugaeva I.I. and Umarova K.V. (2014) the frequency of cheilitis in a typical dental clinic range from 10.76% to 10.83%, and the occurrence exfoliative cheilitis is more common in women, predominantly aged 10 to 40 years, in a ratio of women-to-men of 2:1 ⁹.

of the cases, and the exudative form was diagnosed in 36% of the cases. Gender analysis of the patients with lip diseases showed that women (64.55% of cases) suffer from cheilitis more often than men (35.45% of cases) ¹².

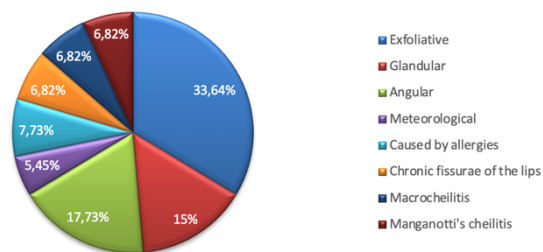
Puryasova A.S. and Chudova L.V. conducted a study on patients with the diseases of oral cavity, they concluded that exfoliative cheilitis is one of the most common pathologies. Lip diseases accounted for 14% in 2020 and 13% in 2021 of the total number of patients with oral cavity diseases. The most common cheilitis were the meteorological and exfoliative cheilitis. Exfoliative cheilitis in our study occurred in 2 patients in 2020, which accounted for 26% of the total number of patients with lip diseases, and in 5 patients in 2021, which was 40%, respectively. Therefore, there was an increase in the occurrence of this disease by 14%, which designates the relevance of this study. Our statistical data agree on average with those obtained in the Nizhny Novgorod region, where exfoliative cheilitis was 31.58% of the cases reported. A similar study was conducted by the Volgograd State Medical University where exfoliative cheilitis was diagnosed in 28 patients and accounted for 10.1% of cases.

A complete clinical examination was conducted to 5 patients diagnosed with exfoliative cheilitis, 2 of them men were under the age of 40 and 3 women under 45 years.

Thus, exfoliative cheilitis is not only a medical problem, but also a personal problem. The prevalence of lip diseases in the study was 14% in 2020 and 13% in 2021 of the total number of patients with diseases of the oral cavity. Exfoliative cheilitis occurred in 2 patients in 2020, which accounted for 26% of the total number of patients with lip diseases, and in 5 patients in 2021 ².

Chizhikova T.S. et al. conducted an objective survey of students studying at various universities in Volgograd, Russian Federation, which included 2,930 students, and displayed a high prevalence of 33.79% for the diseases of the oral cavity, tongue and lips. Lip diseases were most diagnosed. Lip diseases, such as meteorological cheilitis, dry form of exfoliative cheilitis, chronic lip cracks was diagnosed in 584 students (19.94%), making it a common disease. Tongue diseases such as macroglossia, geographic tongue, median rhomboid glossitis, fissured tongue, papilloma, etc. were found twice

PATIENTS WITH LIP DISEASES



SEX ANALYSIS OF PATIENTS

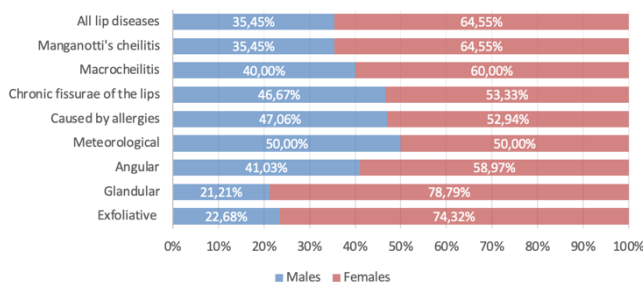


Figure 1. Scoring an average of 33.64% of all cases.

Rabinovich O.F. et al. in their article "The prevalence and morphology of lip diseases among patients at the department of oral diseases of the Central Research Institute of Dental and Maxillofacial Surgery in Moscow, Russian federation" came to conclusions that we will further consider. Over an observation period of three years, from 2012 to 2014, a total of 3664 patients applied to the department of oral diseases of the Central Research Institute of Dental and Maxillofacial Surgery. The selection of patients with lip diseases was carried out by continuous observation. Exfoliative cheilitis was most common among lip diseases, scoring an average of 33.64% of all cases (Fig.1). The dry form of exfoliative cheilitis was diagnosed in 64%

as rarely in 254 students (8.64%). 152 students (5.17%) had various other pathologies of the oral mucosa such as chronic recurrent aphthous stomatitis, leukoplakia, lichen planus and many others¹⁷.

A study of patients with drug addiction was conducted by Professor Andrei Sevbitov and his colleagues on 163 patients with drug addiction. In drug-addicted patients, a high prevalence of cheilitis, including angular cheilitis was noticed. 54.2% of cases had various forms of cheilitis in 73 patients of the age group of 15-18 years. Cheilitis was more common in adult patients with drug addiction. The prevalence was 88.6% in men, and 85.5% in women, while in students, cheilitis was detected in only 10% of the cases. Table 1 presents an analysis of the condition of the vermilion in patients of the pediatric and adolescent department.

Diagnosis	Cases identified among boys	Cases identified among girls
Dry form of exfoliative cheilitis	11	8
Angular cheilitis	15	8
Median labial fissure	2	0
Combination of exfoliative and angular cheilitis	8	2
Combination of exfoliative cheilitis and median labial fissure	0	0

Table 1. Lip diseases in drug-addicted adolescents.

It was noticed that out of 43 boys suffering from drug addiction, 30 boys had lip diseases, which is 74.5%. On the other hand, out of the 30 girls examined, 18 out of 30 drug-addicted girls had cheilitis, which accounted for 51%. Out of the 73 patients which were examined, various forms of cheilitis were detected in 48 patients which accounts for 54.2%. It has been established that in adult drug-addict patients, cheilitis occurs more often, at 88.6% of the cases in men, and at 85.5% of the cases in women¹⁸.

Sivabalasundram et al. conducted a study at the University of Pajajaran, Indonesia, were students with stress and bad habits which were assigned as predisposing factors of exfoliative cheilitis. Showing that 30.1% of the students diagnosed having mild form of exfoliative cheilitis, 53% having moderate form of exfoliative cheilitis, and 16.9% showing a severe form of exfoliative cheilitis. Thus, the place of stress in the etiology of exfoliative cheilitis was again proved¹⁹.

Bhavnit K. et al. in their article: "Excimer

laser therapy and narrowband ultraviolet B therapy for exfoliative cheilitis" conducted a study in which 2 patients participated, who were unsuccessfully treated for exfoliative cheilitis. The authors introduced excimer laser therapy, followed by manual narrow-band ultraviolet radiation therapy for supporting treatment, and onwards monitored them for improvement in clinical status and for any signs of side effects²⁰.

Soulafa et al. in their article: "Characterization and management of exfoliative cheilitis: a single-center experience", conducted a study where fifteen patients with a mean age of 59 years and a women-to-men ratio of 2:1, which were diagnosed with exfoliative cheilitis from 2000 to 2010. Parafunctional lip licking (53%) and a history of psychiatric disorders (40%) were common. Ten patients (66%) returned for follow-up examination with an overall convalescence rate (partial or complete) of 80% at a median follow-up time of 2 months, this was associated with the use of topical calcineurin inhibitors or moisturizers. Treatment of exfoliative cheilitis with topical calcineurin inhibitors and moisturizers is associated with improved clinical outcome, but further studies are needed to confirm their clinical outcome²¹.

Taniguchi et al. in their article "Exfoliative Cheilitis: A Case Report and Review of the Literature", conducted a study that investigated a 16-year-old boy with permanent formation of crusts on his lips. The biopsy showed parakeratosis, which is a typical sign of exfoliative cheilitis, and a moderate inflammatory infiltration without fungal infection. These results are matched with the diagnosis of exfoliative cheilitis. Usage of antidepressant medications helped. The authors confirmed in their work that the etiology of exfoliative cheilitis is associated with stressful situations²².

Kamran et al. in their scientific article "Cheilitis in acne vulgaris patients with no previous use of systemic retinoid products", conducted a study involving 400 patients undergoing isotretinoin treatment. The authors stated that one of the most common side effects reported with isotretinoin is cheilitis. Out of the 400 patients examined, 134 (34%) had signs of cheilitis at the initial examination. Two-thirds (63%) were women (P < 0.001). The distribution of cheilitis was as follows: 55% on the lower lip, 30% on both lips, and 16% on the upper lip. More than a quarter (27%) of patients with cheilitis had

acne, compared with only 8% of patients without signs of cheilitis ²³.

Conclusions

Thus, after analyzing the results of the study, we can conclude that the occurrence of exfoliative cheilitis on the vermilion is quite high. Depending on age, the structure of exfoliative cheilitis is quite variable and its clear dependence on gender characteristics can be traced at the ratio of women-to-men 2:1. Having studied the results of our research, it can be concluded that exfoliative cheilitis occurs most often at the age of 20-45 years. The development of this pathology is directly related to the psychoemotional state of the patients; in addition, concomitant diseases of patients, as well as the place of work plays a large role in the occurrence of this pathology. Among other pathologies of the vermilion, the prevalence of exfoliative cheilitis is 31.58%, which indicates its high prevalence among oral cavity diseases.

Declaration of Interest

The authors report no conflict of interest.

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